



ABOUT MEDSLEEP

With the success of the initial clinic, additional sites were opened across Canada, and we continue to expand to bring top flight sleep health to individuals both in urban centers as well as smaller communities. We believe in the power that a good sleep can have on a person's health.

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Management of Anxiety and Insomnia Related to COVID

Many people are now struggling more than ever to get a decent night of sleep. According to a recent pharmacy tracking report, the use of sleeping pills, anxiety medications, and antidepressants have spiked during the COVID pandemic, with prescriptions increasing by 21%. This followed the promising statistic that the use of these types of medications had significantly decreased between 2015 and 2019. A recent paper by Lin et al. (2021) investigated the early impact of COVID-19 pandemic on sleep and psychological symptoms (N > 5000). This survey quantified the acute impact of lockdowns on insomnia, anxiety, depression, and acute stress, showing very high rates of clinically significant insomnia (20%), acute stress (16%), anxiety (19%), and depression (25%). Symptoms were more prominent in those living in the epicenter, as well as health-care workers and management staff on the front lines. Retrospective evaluation showed a 37% overall increase in clinical insomnia related to the pandemic.

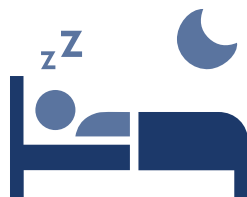
These statistics are likely representative of any first World population. We have certainly seen similar increases in patients presenting for evaluation at MedSleep. Before considering sleep or anxiety medications, we provide suggestions to help patients better manage these symptoms. Many of these may seem like common wisdoms, but it's surprising how helpful they can be, especially since COVID may have thrown many off their routine behaviors. Here are some reminders/suggestions that patients find helpful:



SET YOUR SCHEDULE AND ROUTINE

Avoiding major variation in daily sleep times is highly recommended. Having some extra time for sleep may be beneficial, but extra late bed-times and long sleep-in times (in the absence of routine work) could eventually lead to more disrupted sleep and declining mood.

Advice: Get up at a consistent time, shower, get dressed, and prepare yourself for the day, even if you're not leaving the house. Any daytime napping should be limited to 20-30 minutes maximum, and only if it doesn't interfere with nocturnal sleep.



RESERVE YOUR BED FOR SLEEP

Advice: Working-from-home should never include working-from-bed. It also means avoiding bringing a laptop into bed to watch a movie or series. Reserve your bed for sex and sleep only.



LIGHT

Advice: As much as possible, expose yourself to outside natural light to assist in a feeling of well-being as well as maintaining circadian synchronization. Walks outside are the best source of light, and now more desirable as we move into Spring. On the other hand, blue light produced by electronic devices (phones, tablets, computers) has been found to interfere with the body's natural sleep-promoting processes. As much as possible, avoid using these devices for an hour before bed. You can also use device settings or special apps that reduce or filter blue light.



STAY ACTIVE

It's easy to overlook exercise when you're couped-up inside, but regular daily activity has numerous vital benefits for weight management, mental health and sleep.

Advice: Many gyms, along with yoga and dance studios, live-stream free classes. Further, there are many creative on-line suggestions on how to develop your own exercise routines in and around your own home.



IMPROVED SLEEP THROUGH RELAXATION TECHNIQUES

Advice: Deep breathing, stretching, yoga, mindfulness meditation, calming music, and quiet reading are just a few examples of relaxation techniques that you can build into your routines. Try exploring on-line apps like Calm (www.calm.com) that provides some very effective management programs.



ENCOURAGE CONNECTION

There is clear evidence that connection with family and friends leads to reduced stress and improved mood and sleep quality.

Advice: Use technology maintain social connection with friends, despite social distancing rules. Through internet group meetings apps, you can have virtual cocktail parties, family reunions, games nights with friends, etc. Some may find their pandemic social life is even more active with these options.



WATCH WHAT YOU EAT AND DRINK

Encouraging creative strategies for healthy eating and weight management are especially important in these times.

Advice: 1) Stick to your pre-pandemic meal routine, whatever that may have been; 2) Focus on more nutritious foods; 3) Remove temptations; 4) Prepare ahead, especially to avoid the need for last-minute shopping; 5) Explore your inner chef; and 6) Do not increase your alcohol intake, despite the temptation.

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LIVE BETTER.**



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The importance of CPAP compliance for pre-diabetic and diabetic patients



Obstructive sleep apnea (OSA) is associated with increased risk of pre-diabetes and type 2 diabetes (T2D). The largest study to date examined a cohort of more than 5000 non-diabetic participants, showing that glucose concentration was significantly linked with the severity of sleep apnea. With participants divided into groups based on apnea severity, the HbA1c levels rose from 5.2% (lowest severity) to 5.5% (highest severity). Thus, OSA severity appears to be a predictor of glycaemic health in non-diabetic apnea patients, irrespective of sex, obesity or daytime sleepiness.

Sleep apnea increases blood sugar levels partly due to the stress-response associated with sleep deprivation and repeated abrupt awakenings from sleep. This disruption can elevate sympathetic activity and the release of counter-regulatory hormones, including cortisol, glucagon and epinephrine. Although there is a natural rise in blood glucose in the early morning hours (presumably in preparation for start of the day), excessive sleep disruption may exaggerate this so-called “dawn phenomenon”, making morning blood sugars especially difficult to regulate, and contributing to general insulin insensitivity.

Studies have shown that treating OSA with only 1-week of optimal continuous positive airway

pressure (CPAP) therapy lowered average 24-hour glucose levels and improved post-breakfast glucose response. The dawn phenomenon was also reduced by 45%. It is important to consider that the association between OSA and glycaemic control may be dependent on the sleep stage in which apneas occur. Obstructive apneas are often most prevalent during stage R (REM) sleep. These events are longer in duration and associated with greater oxygen desaturation as compared with non-REM sleep, which would cause greater surges in sympathetic activity. Because the largest proportion of REM sleep occurs during the early morning hours (before typical awakening), the benefits of CPAP therapy in patients with T2DM may not be achieved with the typical CPAP use of 3 to 4 hours/night. Studies have shown the patients with T2D who are compliant with CPAP therapy (5-8 hours/night) show a significant reduction in plasma glucose levels, without a significant change in serum insulin levels. From a mechanistic standpoint, this would indicate that optimizing CPAP leads to an improved insulin sensitivity (ie, reduced resistance).

Given these associations, it seems appropriate to consider OSA as an important and modifiable risk factor in patients with pre-diabetes and T2D, which can be mitigated only by the most compliant CPAP therapy. ☾

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IF YOU ASK A PATIENT A RATHER CURIOUS QUESTION: “IS YOUR INSOMNIA RELATED TO TOO LITTLE SLEEP OR TOO MUCH WAKE?”, THEY ALMOST ALWAYS KNOW EXACTLY WHAT YOU MEAN

A new generation of insomnia medications

The orexin signalling system was discovered in the late 1990s. These neuropeptides were discovered by two groups around the same time, so they have two interchangeable names within the scientific community. One group chose the name orexin, taken from the Greek “orexis”, which means appetite. The other group called these neuropeptides hypocretins because they were discovered in the hypothalamus with a structural similarity to the secretin family of neuropeptides.

Orexin neuropeptides are produced in the hypothalamus. Out of the billions of cells in the brain, there are only 10,000 to 20,000 cells that produce orexin. These cells produce two types of orexins, called orexin-A and orexin-B. Subsequent research established that orexins have a key role in regulating arousal, wakefulness, appetitive behaviours and related metabolism. Without enough orexins, the body has a hard time

staying awake and alert. People diagnosed with type 1 narcolepsy have an 85% to 95% reduction in the number of neurons that produce orexins. This raises the possibility that orexin receptor antagonists (ORAs) could provide a new approach to treating insomnia by blocking orexin mediated wake drive. This approach is distinct from most current insomnia drugs, including traditional benzodiazepines (e.g. temazepam) and non benzodiazepine “z drugs” (e.g. zolpidem, eszopiclone), which promote sleep by enhancing γ aminobutyric acid (GABA) inhibitory effects and have a generalized central nervous system depressant effect.

If you ask a patient a rather curious question: “is your insomnia related to too little sleep or too much wake?”, they almost always know exactly what you mean, and the answer is nearly always: “too much wake”. Therefore,

a medication aimed at turning down waking drive has the potential to be an efficacious sleep-aid. Two types of dual (A & B) orexin receptor antagonists (DORAs) are currently approved for the treatment of insomnia in adults: suvorexant (USA only) and lemborexant (USA & Canada). Newer DORAs are still in development. While still a relatively novel drug, evidence suggests lemborexant may be at least more effective with less potential for dependence than zolpidem and escitalopram, both non-benzodiazepine GABA receptor agonists. Lemborexant effectively reduces sleep latency and maintenance compared to controls. In addition, lemborexant appears to be more effective at improving sleep maintenance than zolpidem in patients with insomnia. There is also no evidence of withdrawal symptoms or associated rebound insomnia upon withdrawal of either 5 or 10 mg lemborexant in both 30 day and 6-month trials. 🌙

Sleep Apnea and COVID-19: Reason for Concern

Patients with obstructive sleep apnea (OSA) could have an 8-fold greater risk for COVID-19 infection as well as increased adverse outcomes. It remains unclear at this time whether obstructive sleep apnea (OSA) is an independent risk factor or simply a comorbidity that is associated with COVID-19 morbidity and mortality.

During OSA episodes, higher sympathetic outflow promotes the release of catecholamines, which can lead to elevated systemic blood pressure and tachycardia. These responses to both hypoxemia and arousal lead to increased oxygen demand and tissue hypoxia, which can result in myocardial ischemia and facilitate the triggering of both atrial and ventricular arrhythmias. Intermittent hypoxia associated with OSA can also interfere with lung ventilation. This severity of hypoxia has been shown to influence pulmonary parenchymal involvement, along with pulmonary vascular endothelial dysfunction associated with SARS, and could be a potential reason for the enhanced severity and adverse outcomes of OSA. In addition, increased risk factors for OSA include older age, obesity and male sex (as compared with premenopausal women), and common comorbidities include hypertension, diabetes and idiopathic pulmonary fibrosis. These are essentially identical risk factors associated with increased severity and mortality of COVID-19.

A recent CORONADO (CORONA and diabetes outcome) study revealed that patients with OSA who were hospitalized for COVID-19 had an increased risk for mortality on day 7 of admission (OR = 2.80). The researchers also found “plausible mechanisms” for OSA to independently increase a patient’s risk for morbidity and mortality which, along with diabetes and obesity, may worsen both hypoxemia and the risk of a cytokine storm.

ventilation treatments because they generate aerosols. Researchers are designing filters to reduce the risk for viral shedding through positive airway devices. However, it has been suggested that COVID-19 patients with severe OSA, especially those requiring higher treatment pressures, should quarantine themselves from others and employ thorough daily cleaning of CPAP units and all accessories.

Despite the potential increased risk for COVID-19 in patients with OSA, pandemic response efforts have disrupted OSA diagnosis on a global basis. Sleep medicine services were reduced by 70-100% during the first few months of the pandemic. It is essential to continue to explore diagnostic and treatment pathways for these individuals. MedSleep



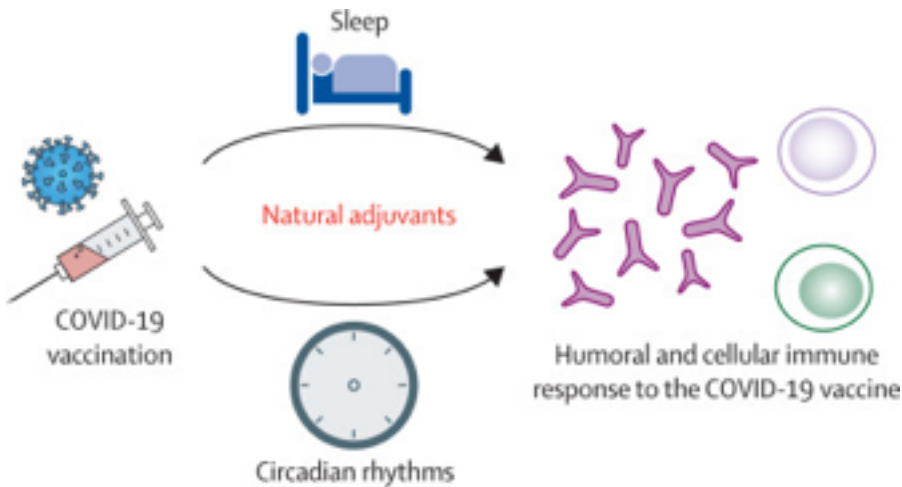
RESEARCH INDICATES THAT THE SLEEP HORMONE MELATONIN MAY BENEFIT SOME PATIENTS WITH COVID-19

Other research indicates that the sleep hormone melatonin may benefit some patients with COVID-19. Melatonin has been shown to reduce the “oxidative stress, inflammation and the immune response” in patients with OSA. It could also improve sleep quality, which can improve COVID-19 outcomes.

There has been mixed evidence as to whether patients should discontinue continuous positive airway pressure (CPAP) or non-invasive

has increased virtual patient assessment and (in some cases) the use of disposable diagnostic tools and noncontact sleep surveillance. Those already diagnosed with OSA but awaiting treatment need to be given priority at this time to mitigate any potential increased risk of a catastrophic outcome related to the pandemic. We will continue to make every effort to maintain safe and effective diagnostic and treatment strategies for all of our patients during these difficult times. 🌙

Sleep and COVID vaccine response

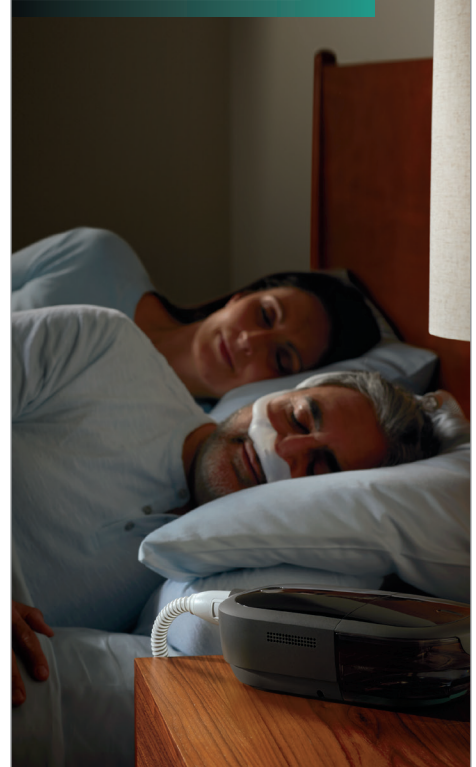


An article published in the Lancet (March 2021) has reviewed whether reduced antibody production due to sleep loss can impact vaccine efficacy. For most healthy people, sleep loss on the night after vaccination might be of minor concern with respect to the vaccine's efficacy. However, among those who are immunocompromised, extending sleep duration during the night after the vaccination might help ensure an adequate response to the vaccine. Sleep might also boost aspects of virus-specific adaptive cellular immunity. Compared to sleep-deprived individuals, normal sleepers show double the relative proportion of virus-specific T helper cells after a hepatitis-A vaccine, as well an increased fraction of interferon- γ (IFN- γ)-positive immune cells, thus increased protection against virus-induced pathogenesis and lethality. The good news is that, for many people, sleep duration has increased during the COVID-19 pandemic with greater work flexibility leading to more desirable sleep-wake schedules. In addition, since the immune system exhibits marked circadian rhythmicity, the timing of the COVID vaccine may also influence the immune response. One study found that administering hepatitis A and

AMONG THOSE WHO ARE IMMUNOCOMPROMISED, EXTENDING SLEEP DURATION DURING THE NIGHT AFTER THE VACCINATION MIGHT HELP ENSURE AN ADEQUATE RESPONSE TO THE VACCINE.

influenza vaccines in the morning instead of the afternoon resulted in a two-fold higher antibody titre 4-weeks later in male participants. It is possible that administering COVID-19 vaccines in the morning might result in higher antibody titres. However, this has not been substantiated and many uncertainties remain. For example, shift-workers have chronic circadian disruption and exhibit a markedly greater risk of COVID-19 diagnosis, so vaccine timing would be even more complex in this population. 🌙

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Insomnia may be worsened by wearable devices (Orthosomnia)

Approximately one third of all Canadians complain that their sleep is unsatisfactory. At the same time, the popular and scientific press have increasingly emphasized the importance of healthy sleep. No doubt this combination has driven the huge explosion of the 'sleep tracker' market. These devices are becoming increasingly comprehensive, but increasingly complex in terms of what they measure and how to interpret that information.

Most sleep trackers were previously worn on the wrist, but there have been some recent interesting additions, such as the Uora smart ring and the dreem headband. In the past, trackers were only estimating sleep vs wake by monitoring body movements. Improved analysis of body movement allowed for better estimates of wake vs nonREM sleep vs REM-sleep. Further developments have led to the addition of heart rate variability, respiratory rate and body temperature monitoring to increase accuracy. Some (like the dreem headband) also include EEG activity. However, none of these personal trackers (to date) have included all of these variables, which are essential for the most accurate determination of sleep vs wake, the various stages of sleep, and the ability to accurately rule-out a specific sleep disorder. Despite their popularity, only a few studies have investigated the accuracy of current sleep tracking devices. So far, research has found that, compared to the gold standard polysomnography (PSG), sleep trackers are accurate about 70% of the time when identifying sleep versus wake (study funded by FitBit). A different study showed only 38% accuracy when estimating sleep onset latency. 🌙



Sleep Anxiety

The important question becomes: is knowing every detail about your sleep actually beneficial? Some patients develop a pre-occupation with sleep that may cause increased anxiety, disappointment/ frustration regarding sleep loss, and increased perceived impairment, all of which can further disrupt sleep. In a recent study, Gavriloff et al. (J Sleep Res) used sham feedback from tracker devices to examine biases in daytime symptom reports. Participants were given sleep watches and asked to complete intermittent measures of mood, daytime thinking processes and sleepiness. However, the "sleep score" given by their watches was manipulated to show either an increase or a decrease in the quality of sleep, whereas the actual sleep data was about the same. The study found that those who were told they had a poor night's sleep showed decreased mood and cognition, as well as increased sleepiness. Those who were told they had a great night's sleep showed the opposite.

Sleep trackers have also provided a flood of data and buzzwords, including sleep debt percentages, sleep rhythms, sleep disruptions, light sleep, deep sleep, and comparisons to other users - all of which can become confusing, if not misleading. Because many users don't recognize the limitation of the device, they may spend an excessive amount of time in bed to "raise" the various sleep ratings on their apps, which can actually lead to a worsening of insomnia. Dr. Kelly Baron (U of Utah) has coined the term 'orthosomnia' (ortho – straight; somnia – sleep) to describe this new-found preoccupation with perfecting sleep through the use of wearable devices. The researchers also found it difficult to get patients to stop using their sleep tracking devices and apps, even when polysomnographic reports proved that the data was incorrect. It would still seem that the best way to assess sleep at home is to consider generally how you're feeling throughout the day. If chronically unsatisfied, it's time to talk to your doctor. 🌙